

CLAIMS

1. Electronic component (1) including at least one resonator element (5) arranged in a housing (8) of a case, which includes a main part (2) with a base (20) and at least one lateral wall (3) of annular shape, and a cover (4) fixed onto the main part to hermetically seal the housing of the case, at least one portion of the cover
5 being transparent to a determined wavelength of a light beam to allow the resonator element to be optically adjusted, characterised in that the cover (4) is fixed onto a rim (7) of the lateral wall (3) of the main part, which is made of a hard material, such as a ceramic material, such that one part of the rim surrounds at least certain portions of the lateral surface of the cover (4) to ensure protection of the electronic component
10 against lateral shocks.
2. Electronic component (1) according to claim 1, characterised in that the height of the part of the rim (7) surrounding the lateral surface of the cover (4) is larger than or equal to the thickness of the cover fixed onto the rim, and in that the part of the rim entirely surrounds the lateral surface of the cover.
- 15 3. Electronic component (1) according to claim 1, characterised in that the transparent cover (4) is a glass cover.
4. Electronic component (1) according to claim 1, characterised in that the rim (7) of the main part (2) of the case receiving the cover includes a first annular layer of gold plating (10), in that the periphery of an inner face of the cover includes a
20 second annular layer of gold plating (11), and in that the cover (4) is welded onto the rim using a metal alloy preform (9) arranged between the two annular layers of gold plating, the metal alloy being able to be formed of tin and gold.
5. Electronic component (1) according to any one of claims 1 to 4, characterised in that it includes a space (22) between the lateral surface of the cover
25 (4) and the part of the rim (7) surrounding the cover, the space being substantially of smaller dimensions than the thickness of the cover.
6. Electronic component (1) according to claim 1, wherein the housing (8) of the main part (2) of the case, which includes the resonator element (5) is vacuum sealed, characterised in that the resonator element is a quartz resonator able to be
30 adjusted by a laser beam through the transparent portion of the cover (4), said quartz resonator being in the form of a tuning fork with two parallel arms (5a, 5b) connected to each other by a bridge (5c) and carrying electrodes (6a, 6b) to make them vibrate, and in that the main part of the case includes at least one stud (12) secured to the base (20) onto which the tuning fork is fixed, said electrodes being electrically
35 connected through the main part of the case to external connection terminals (13).

7. Electronic component (1) according to claim 1, characterised in that it includes an oscillator circuit (15) electrically connected to the resonator element (5).

8. Electronic component (1) according to claim 7, characterised in that the oscillator circuit (15) is arranged in a second housing (18) of the main part (2), which
5 is delimited by the lateral wall (3) and the base (20), the second housing being arranged on an opposite face of the base to the housing (8) of the resonator element (5), in that said oscillator circuit, which is encapsulated in the second housing by a resin (19), is electrically connected to external connection terminals (13) of the electronic component, and in that the base of the main part of the case includes
10 electrical connection paths (14) for electrically connecting the oscillator circuit and the resonator element.

9. Electronic component (1) according to claim 1, characterised in that a getter type material is arranged in the housing (8) of the resonator element (5) to act as a vacuum pump when it is activated.

15 10. Electronic component (1) according to claim 9, characterised in that the getter type material is a layer of evaporated titanium or chromium (21) in the housing (8) of the resonator element, preferably on a part of the inner face of the cover (4), and in that this layer of titanium or chromium is capable of being activated by means of a laser beam through the transparent portion of the cover (4) to act as a vacuum
20 pump and lower the oscillation frequency of the resonator element.

11. Method of manufacturing an electronic component according to any one of the preceding claims, the method including a first series of steps consisting in making the main part of the case by stacking and fixing sheets of hard material, such as a ceramic material, worked to define a base and at least one lateral wall, and
25 mounting a resonator element in a housing of the case, characterised in that the method includes a second series of steps consisting in placing the cover on the rim of the main part, one part of which surrounds the lateral surface of the cover, said cover being positioned on the rim by the part of the rim surrounding the lateral surface of the cover, and fixing the cover onto the rim by heating metal layers arranged on the rim
30 and the cover.